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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,405	11/03/2003	Jin-Woo Heo	45981	3431

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EXAMINER

KERVEROS, JAMES C

ART UNIT PAPER NUMBER

2138

DATE MAILED: 03/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/698,405	HEO ET AL.	
	Examiner	Art Unit	
	JAMES C. KERVEROS	2138	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

This is a Non-Final Office Action in response to the present US Application filed 11/03/2003. Claims 1-16 are presently pending and under examination.

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d), for REPUBLIC OF KOREA Application No. 2002-67756 filed 11/04/2002. The certified copy has been filed in parent US Application No. 10/69840, filed November 3, 2003.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Shin et al. (US 20040006734) FILED: December 30, 2002.

Regarding Claims 1-3, 9-11, Shin discloses a method for Fast H-ARQ acknowledgement generation using a stopping rule for turbo decoding in a mobile communication system, Figures 1, 2 and 3, comprising:

Decoding first data using the Turbo decoding method 10 and 70 (steps 14-22), where the method commences by receiving a Turbo code block from a demodulator as shown by the flowcharts of Figure 1 and 2, respectively.

Determining the completion status of the decoder using stopping rule decision unit 114, which checks whether the decoding iteration converges or diverges, or neither. If the decision turns out to be either "converged" or "diverged", the iteration is stopped and either "ACK" or "NACK" indication depending on convergence or divergence is generated for H-ARQ processing. Otherwise, the decoder continues the iteration.

Interrupting the decoding at a predetermined time using a counter by initializing ( $i=0$ ) (step 16) and then counting incrementally ( $i=i+1$ ) (step 18) before generating (ACK/NAK) response. The decoding process is terminated as described in (steps 26-36). For example accordingly, at step 26, it is determined whether the iteration converges. If so, the iteration process is terminated after generation of an ACK (step 28) and the decoded sequence is output (step 36). If not, it is determined whether the iteration diverges (step 30). If the iteration diverges, the iteration process is terminated after generation of NACK (step 32) and the decoded sequence is output (step 36). If the iteration does not diverge, it is determined whether the maximum number of iterations ( $i=N_{max}$ ) has been reached (step 34). If so, the iteration process is terminated and the decoded bit sequence is output (step 36). If not, the process returns to step 18 whereby the counter is incremented ( $i=i+1$ ) and steps 20-36 are repeated.

Regarding Claim 4, 12, Shin discloses receiving a Turbo code block from a demodulator (step 14, Figure 2) and shown in Figure 3 as a Turbo decoder 100

processes soft-valued input data 102 in each Turbo code block in a transmission, where the Turbo code block includes a control message (parity bit sequence) and a data.

Regarding Claim 5, 13, Shin discloses Shin discloses response (ACK/NAK), where the decoding process is terminated as described in (steps 26-36), having a delay controlled by the counter.

Regarding Claims 6, 7, 14, 15, Shin discloses a counter for decoding iterations (steps 16-22), which controls the decoding time based on individual data size. For example, if the iteration does not diverge (step 30), it is determined whether or not the iteration has reached the maximum number of iterations  $N_{max}$  (step 34). If so, the iteration process is terminated and the decoded sequence is output (step 36). If the maximum number of iterations  $N_{max}$  has not been reached, as determined at step 34, the counter is incremented (step 18) and steps 20-36 are repeated.

Regarding Claim 8, 16, Shin discloses implementing a stopping rule for good code blocks, but also for bad code blocks, which fail to be correctly decoded even at the last decoding iteration. The result of the stopping rule testing may be used to determine whether a given H-ARQ process is in error (NACK generation) or error-free (ACK generation). If the response is NACK, then the Turbo code blocks are retransmitted, according to H-ARQ protocol.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Xu et al. (US 20010052104) FILED: March 9, 2001, Iteration terminating using quality index criteria of turbo codes.

Xu discloses (Figures 4-6) a method for turbo decoding, including the steps of comparing the local quality index to a predetermined threshold. If the local quality index is greater than or equal to the predetermined threshold then the iterations are allowed to continue, step 106. However, if the local quality index is lower than the threshold, then in step 108 the samples are retransmitted in an attempt to obtain a higher quality signal, and the sample counter is reset so that the iterations can be reset and restarted. Step 110 is terminating the iterations when the measure of the quality index exceeds a predetermined level being higher than the predetermined threshold.

Dahlman et al. (US Patent No. 6,907,005) filed July 24, 2000.

Dahlman discloses a method for Flexible ARQ for packet data transmission, comprising a receiver side (Figure 9), including a signal processing block 680 which performs among others decoding for detecting erroneous packets. Either an acknowledgement message (ACK) or a negative acknowledgement message (NACK) is sent back for each packet to the controller 500 on the transmitter side. If the transmitter controller 500 receives a negative acknowledgement or if a delay time  $t$  expires, then the transmitter retransmits the packet to the receiver. This retransmission procedure may repeat until an acknowledgement is received.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES C. KERVEROS whose telephone number is (571) 272-3824. The examiner can normally be reached on 9:00 AM TO 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Date: 27 February 2006  
Office Action: Non-Final Rejection

JAMES C KERVEROS  
Examiner  
Art Unit 2138

By:  2/27/06